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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,641	06/18/2001	Takeshi Matsumoto	13298-002001	1839

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225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER

STRICKLAND, JONAS N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 07/22/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/883,641

Applicant(s)

MATSUMOTO ET AL.

Examiner

Jonas N Strickland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 20 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, i.e., claims 1-19 in Paper No. 7 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 5 recites the limitation "wherein said zeolite" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 3-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurokawa et al. (US Patent 5,958,826).

Applicant claims an exhaust purifying catalyst comprising: a first catalyst component containing a refractory inorganic oxide carrying a platinum family metal, a

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nitrogen oxide adsorbent, and a hydrocarbon adsorbent; and a second catalyst component for the purification of nitrogen oxide.

Kurokawa et al. discloses a burned gas purifying catalyst which includes an under catalyst layer and an over catalyst layer, which includes at least one catalytic metal on the under catalyst and over catalyst layer (see abstract). The over catalyst layer (the first catalyst component) contains a platinum family metal (col. 2, lines 40-52), a nitrogen oxide adsorbent, such as barium and lanthanum (col. 3, lines 40-47), and a hydrocarbon adsorbent comprised of metal silicate (zeolite; col. 3, lines 18-25). The under catalyst layer is comprised of palladium and is used for the purification of nitrogen oxide (col. 2, line 53 – col. 3, line 17). The support may be comprised of alumina, with respect to claims 3 and 4 (col. 7, lines 30-34). The zeolite may be a Y zeolite, with respect to claims 5 and 6 (col. 5, lines 1-7). The platinum family metal may be platinum or palladium (col. 2, lines 40-42). With respect to claims 8 and 9, the amount of said platinum family metal may be 0.5 and 20 grams per liter of the catalyst (col. 6, lines 24-31).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 2, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurokawa et al. (US Patent 5,958,826) in view of Kunio et al. (JP 07-047227).

Applicant claims with respect to claims 2, 18, and 19, wherein the first catalyst component is comprised of a nitrogen oxide adsorbent, which includes hydrated iron oxide or nickel and wherein said first and second catalyst components are uniformly mixed and wherein the first catalyst component is made to form an inner layer and said second catalyst component is disposed on the outside of the inner layer.

The teachings of Kurokawa et al. have been discussed with respect to claims 1 and 3-9. Kurokawa et al. teaches having a first catalyst component and a second catalyst component. The first catalyst component is comprised of a nitrogen oxide adsorbent, such as barium and lanthanum, but there is no mention of nickel or hydrated iron oxide.

However, Kunio et al. teaches a process for the purification of exhaust gases containing nitrogen oxide and teaches where it is known in the art to use hydrous iron oxide as an adsorbent for adsorbing nitrogen oxide (see abstract).

Therefore, it would have been obvious to one of ordinary skill in the art, to modify the teachings of Kurokawa et al., which teaches treating exhaust gas comprised of nitrogen oxide with a nitrogen oxide adsorbent, based on the teachings of Kunio et al., which also teaches a process for treating exhaust gas containing nitrogen oxides by treating the gas with a nitrogen adsorbent. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a process for treating nitrogen oxides in an exhaust gas using an adsorbent as taught by Kunio et al., to be similarly useful and applicable to the process of treating exhaust gases, comprised of nitrogen oxides with an adsorbent as taught by Kurokawa et al.

Furthermore with respect to claims 18 and 19, it would have been obvious to one of ordinary skill in the art to be able to form a uniform mixture of the first and second catalyst components, based on the teachings of Kurokawa et al., which teaches wherein a first catalyst component slurry is washcoated over the under catalyst layer (col. 4,

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lines 49-53). Kurokawa et al teaches wherein a mixture is possible based on this teaching. Furthermore, it would have been obvious for one of the catalyst components to be the inner layer, as well as the outer layer, in order to treat the exhaust gas based on Figure 1.

11. Claims 10-12, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurokawa et al. (US Patent 5,958,826) in view of Horiuchi et al. (US Patent 5,911,961) and Farrauto et al. (US Patent 5,804,155).

Applicant claims with respect to claims 10-15, specific amounts of components with respect to the catalyst. The teachings of Kurokawa et al. have been discussed with respect to claims 1 and 3-9 and Kurokawa et al. does not teach certain amounts with respect to the components of the instantly claimed exhaust purifying catalyst.

However, Horiuchi et al. discloses a catalyst for the purification of exhaust gas. The catalyst is comprised of a platinum family metal as well as iron, which is known to adsorb nitrogen oxides (col. 3, lines 1-10). Horiuchi et al. continues to teach wherein the refractory inorganic oxide is in the range of 0.01 to 25 g/L (col. 3, lines 12-19) and wherein the catalyst composition to be deposited on the carrier may be deposited in the range of 0.1 to 200 g/L (col. 3, lines 45-48).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Kurokawa et al., based on the teachings of Horiuchi et al., by maintaining the desired amount of the refractory inorganic oxide and the nitrogen oxide adsorbent, because Horiuchi et al. discloses a catalyst for the purification of exhaust gas comprised of a platinum metal wherein the catalyst is comprised of a refractory

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inorganic oxide is in the range of 0.01 to 25 g/L and wherein the catalyst composition to be deposited on the carrier may be deposited in the range of 0.1 to 200 g/L. It should be noted that the catalyst taught by Horiuchi et al. is directed towards diesel engines and diesel engines are sources for nitrogen oxides and since the catalyst as taught by Horiuchi et al. is comprised of similarly catalytic components (alkaline metals, such as barium, which is a nitrogen oxide adsorbent col. 3, line 5), as discussed by Kurokawa et al., it would have been obvious to expect the catalyst as taught by Horiuchi to be able to treat nitrogen oxides, with respect to the nitrogen oxide adsorbent and the second catalyst component of claims 14 and 15.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurokawa et al. (US Patent 5,958,826) in view of Farrauto et al. (US Patent 5,804,155).

Applicant claims with respect to claim 13, wherein the hydrocarbon adsorbent comprises from 10 to 100 g per liter of the catalyst.

The teachings of Kurokawa et al. have been discussed with respect to claims 1 and 3-9 and Kurokawa et al., while teaching a hydrocarbon adsorbent, does not teach wherein the hydrocarbon adsorbent comprises from 10 to 100 g per liter of the catalyst.

However Farrauto et al. teaches a basic zeolite hydrocarbon adsorbent for diesel oxidation catalysts, wherein the zeolite may be present from about 0.25 to about 4.0 g/in³ (col. 7, lines 28-31) and wherein variations may be made to embodiments of the zeolite catalysts (col. 7, lines 37-41), therefore it would have been obvious to one of ordinary skill in the art to have a hydrocarbon adsorbent in the range from 10 to about 100 g/L of the catalyst, wherein the amount of zeolite may vary based on the teachings

of Farrauto et al. Furthermore, it would have been obvious to one of ordinary skill in the art to combine Farrauto et al. and Kurokawa et al., since both references teach using a zeolite hydrocarbon adsorbent on a catalyst comprised of platinum.

13. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurokawa et al. (US Patent 5,958,826) and Hidetoshi (JP 08-281111).

The teachings of Kurokawa et al. have been discussed with respect to claims 1 and 3-9, but Kurokawa et al. does not teach the limitations of claims 16 and 17.

However, Hidetoshi teaches a catalyst for purifying exhaust gases having two catalyst components, where one component is upstream and the second component is downstream and wherein the two components are at least two pieces (see constitution).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Kurokawa et al, based on the teachings of Hidetoshi which teaches a catalyst for purifying exhaust gases having two catalyst components, where one component is upstream and the second component is downstream and wherein the two components are at least two pieces. Such modification would have been obvious to one of ordinary skill in the art, because both references are directed towards treating exhaust gases.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fujitani et al. (US Patent 5,041,270) ; Horiuchi et al. (US Patent 5,610,117); Sawyer et al. (US Patent 5,849,255); JP-05137963; JP-A957093.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N Strickland whose telephone number is 703-306-5692. The examiner can normally be reached on M-TH. 7:30-5:00, off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0661.



Jonas N. Strickland
July 16, 2003



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